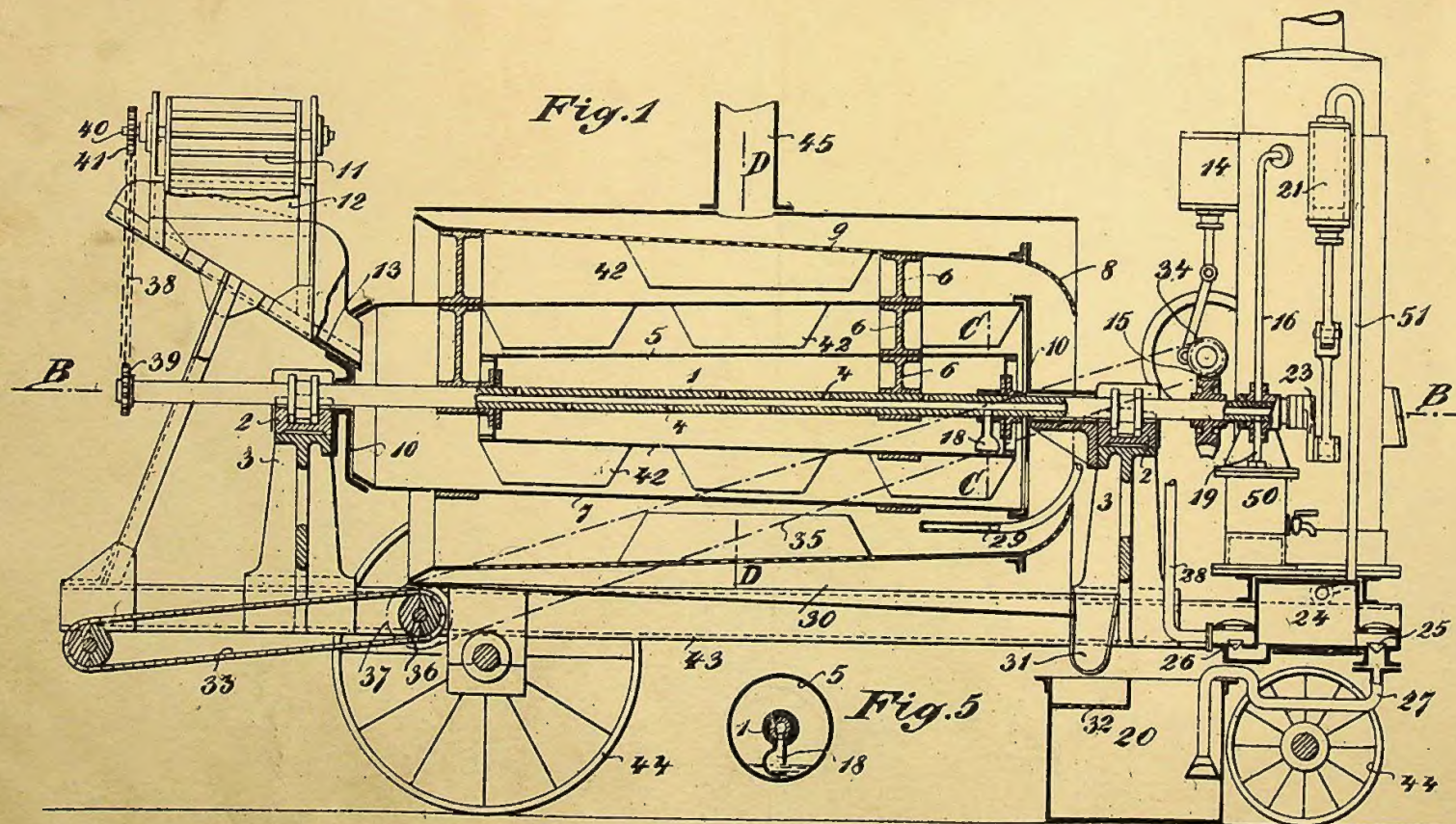


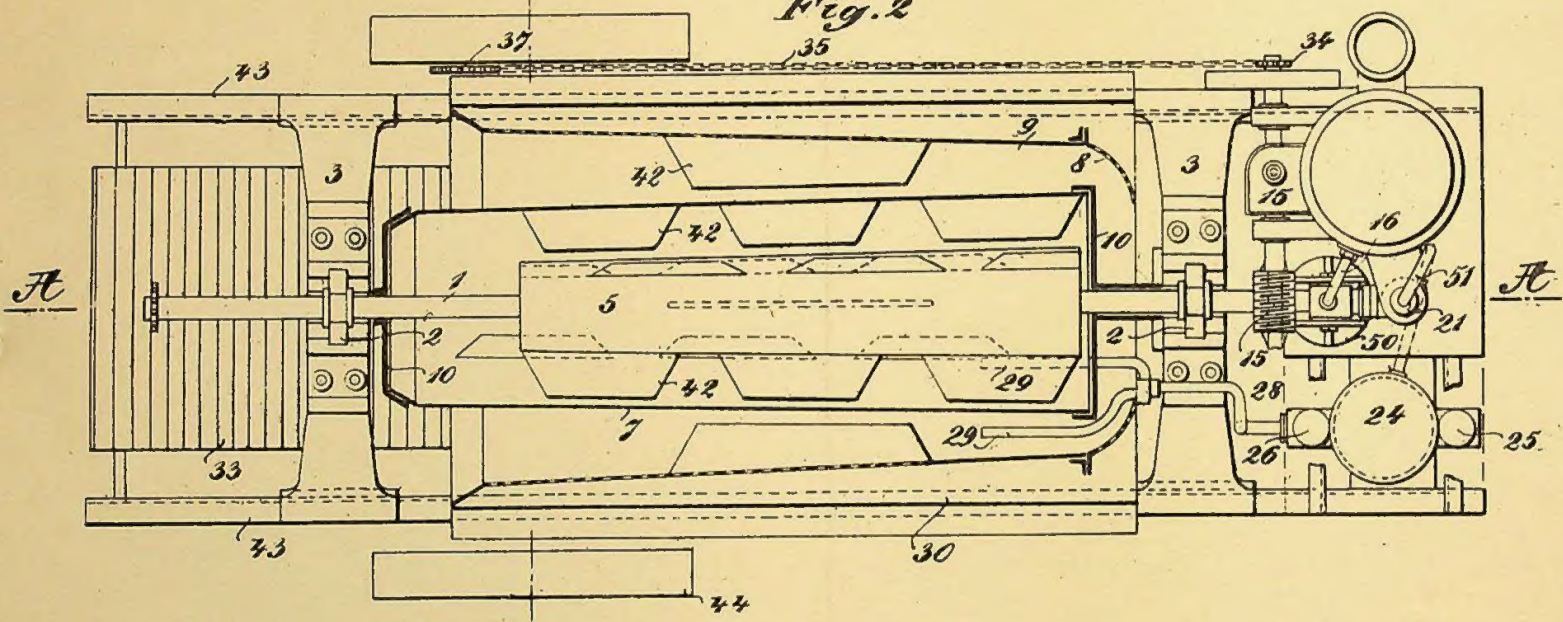
A.D. 1909. OCT. 5. N^o. 22,682.
BOLTSHAUSER'S COMPLETE SPECIFICATION.

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C. Boltshauser
PATENTING,
TOOLS
(3 SHEETS,
SHEET 1.



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Fig. 2



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[This Drawing is a full-size reproduction of the Original.]

Fig. 3

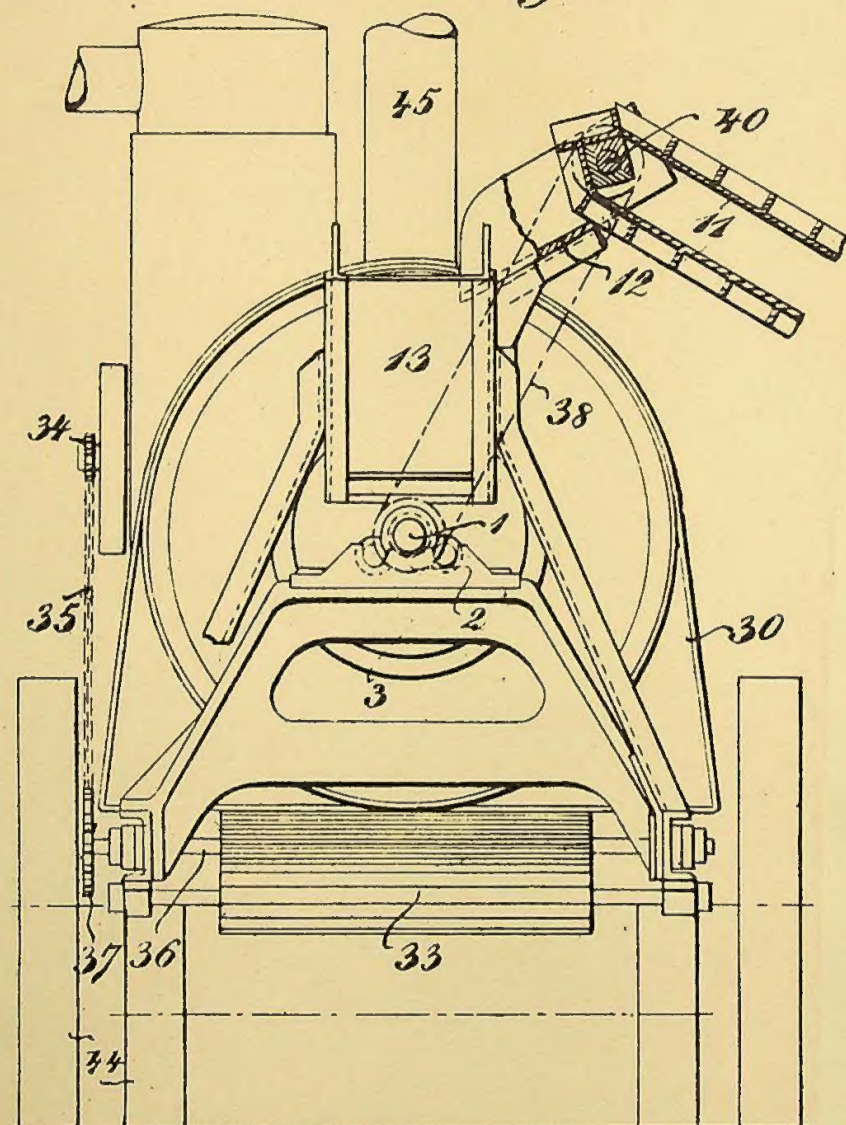


Fig. 4

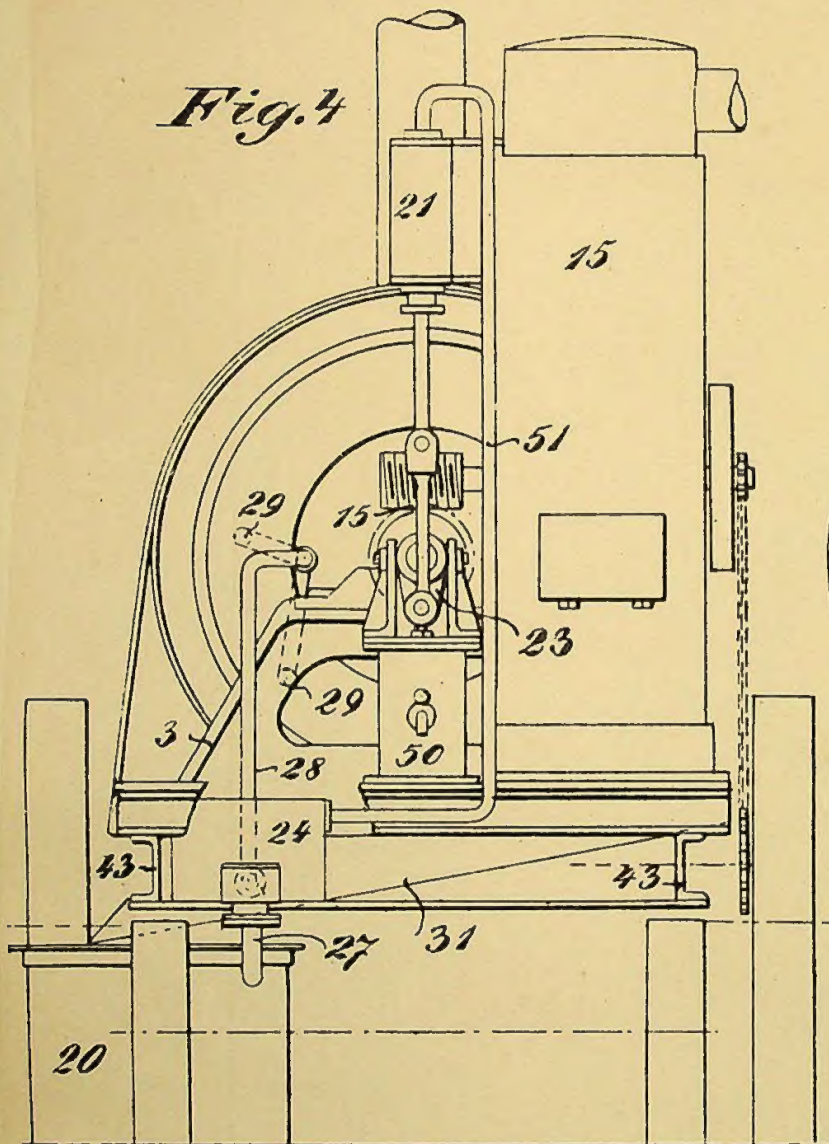
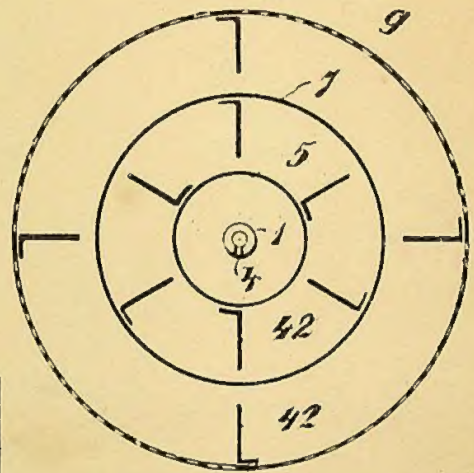


Fig. 6



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A.D. 1909

(Under International Convention.) *Duplicate.*

Date claimed for Patent under Patents and
Designs Act, 1907, being date of first } 5th Oct., 1908
Foreign Application (in Germany), }

Date of Application (in the United Kingdom), 5th Oct., 1909

At the expiration of twelve months from the date of the first Foreign Applica-
tion, the provision of Section 91 (3) (a) of the Patents and Designs Act,
1907, as to inspection of Specification, became operative

Accepted, 7th Apr., 1910

COMPLETE SPECIFICATION.

Improvements relating to a Process and Apparatus for Producing Dust- proof and Firm Macadam for Roads.

I, CONRAD BOLTSHAUSER, of 1 Friedensgasse, Zürich, in Switzerland, Engineer,
do hereby declare the nature of this invention and in what manner the same is
to be performed, to be particularly described and ascertained in and by the follow-
ing statement:—

This invention relates to a process and apparatus for producing dust-proof and
tar macadam for roads by using coarse gravel or pebbles coated with tar in a
suitable manner.

Various processes are known for the production of tar-macadam with the object
of preventing dust. It is usual to coat gravel with a thin covering of tar and
then store the same in layers with intervening layers of sand and then allow
same to rest for more or less long periods so as to cause the sand to absorb
the superfluous tar from the gravel. The sand being subsequently utilised to
fill up the spaces between the gravel stones and so ensure a solid combination
which obviates dust.

Practical experience has shown that roads made with this material are objec-
tionable and soft for the reason that the sand is not capable of absorbing super-
fluous tar from the gravel. The tar accumulates in patches and leaves the sand
mostly in its natural condition so that the latter cannot solidly combine with
the gravel and moreover forms dust on the road, while the gravel only forms
a loose surface which readily gives way under heavy traffic.

According to some of the known processes gravel is strongly heated and thus
becomes covered with only a thin coating of tar. For this reason no superfluous
tar is left which can combine with the filling sand of the road.

The present process relates to the production of dust-proof tar-macadam by
subjecting gravel to heating and coating actions so as to receive a minimum
amount of tar for binding, and covering same with heat-retaining material.

While with the previously known processes the gravel and tar form a badly
adhering mixture, my improved process is carried out in a mechanical con-
tinuous manner and forms the materials into an asphalt-like mass. For this
purpose gravel in a cleaned and screened condition is heated and coated with
tar and whilst still hot is placed together in heaps and covered with a heat

[Price 8d.]

Apparatus for Producing Dust-proof and Firm Macadam for Roads.

retaining covering, for example dung, straw and so forth. It is then left for a long time.

The heat of the mixture with the exclusion of air transforms the tar adhering to each gravel stone into an asphalt-like substance which alone is capable of forming a firm road surface. This asphalt-like material has after hardening the tenacity of natural asphalt and prevents the disintegration of stones from the rolled-in road material. Consequently, as no particles of the road material can become detached which would be ground up by the traffic no dust can result therefrom.

For drying the gravel and for mechanically preparing the tar-gravel mixture it is advantageous to use a machine such as is shown by way of an example in the accompanying drawings in which:—

Figure 1 is a longitudinal section taken on the line A—A of Figure 2.

Figure 2 is a partial horizontal section on line B—B of Figure 1.

Figure 3 is a rear view and

Figure 4 a front view of the machine.

Figure 5 is a section on line C—C of Figure 1.

Figure 6 is a section on line D—D of Figure 1.

A drum shaft 1 is mounted in roller bearings 2 on pedestals 3. The drum shaft is hollow and has perforations 4 by which the interior of said shaft communicates with the surrounding heating drum 5, which is connected to its shaft 1 by means of radial arms and rings. The heating drum is disposed within a drying drum 7 which is connected to the former by arms and rings 6. Both drums are tapered down toward the rear of the machine. Around the drying drum is mounted a mixing drum 9 which also has arms and rings 6 connecting it with the drum 7. The drum 9 tapers down towards the front of the machine and is perforated as shown. The front end of the mixing drum 9 extends over the drying drum and forms a perforated guard 8 which receives and sifts the gravel from the drying drum before said gravel can enter the real mixing space of said mixing drum. The two ends of the drying drum have covers 10 which leave sufficient opening for the introduction of the gravel for drying at one end and for the outlet of dry gravel. The supply of gravel is effected at the rear end of the machine by means of an elevator 11 provided with inclined chutes 12 and 13, which latter leads into the drying drum.

The machine is driven by a steam engine 14 which may be placed at the front end of the machine and impart rotation to the shaft 1 through the intervention of a worm gear 15. The steam generator can supply steam to the heating drum through a pipe 16 which leads into the interior of the hollow shaft 1. The latter is fitted with scoops 18, see Figures 1 and 5, for emptying the condensation water from the heating drum into the hollow shaft from which it flows into a pipe 19 and receiver 50.

From a tank 20 tar is taken by a pump 21 operated by a crank 23 on shaft 1 said pump having a pipe 51 connected with a valve chamber 24 furnished with a suction valve 25 and a pressure or lift valve 26. The suction valve covers a suction pipe 27 leading into the interior of the tank 20 while the pressure valve closes the pipe 28 connecting the valve chamber 24 with the mixing drum. Thus, the tar can be drawn from the tank 20 and forced into the mixing drum 9. The pipe 28 has preferably two perforated distributing ends 29 within the mixing drum so that the tar is finally divided and sprinkled on the gravel. Any excess of tar flows from the drum into the outer casing 30 which is formed with a forwardly slanting floor so as to cause the tar to run out through gutter 31 and back into the tank 20 through a strainer 32 which retains any gravel taken along with such tar.

The prepared and coated gravel is delivered at the rear end of the mixing drum on to a conveyor 33 which is driven from the engine shaft through the intervention of a chain wheel 34, chain 35 and chain wheel 37 on shaft 36. The drum shaft 1 has a chain wheel 39 with chain 38 on a wheel 41 fast on the

Apparatus for Producing Dust-proof and Firm Macadam for Roads.

elevator shaft 40. All the drums are furnished with blades 42 for the progressive movement of the materials being treated.

The casing 30 has a chimney 45 for leading away the vapours during working. The machine is mounted on two side frames 43 carried on wheels 44, but

5 the latter may be dispensed with when the machine is not used on the road.

The gravel is delivered by the elevator into the drying drum and the rotation of the latter causes the gravel to be agitated by the blades 42 and gradually moved along the exterior of the heating drum towards the front of the machine and so dried. The gravel then falls from the outlet of the drying drum on to

10 the guard 8 of the mixing drum. Here it is sprinkled with tar from the perforated distributors 29 of the pipe 28 and then constantly turned and agitated by the blades 42 until each grain is thoroughly coated.

The excess of tar escapes through the perforated walls of the mixing drum and runs along the floor of the casing 30 into the tank 20 from which it is

15 pumped by the pump 21 back into the mixing drum.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. A process carried out in a mechanical continuous manner for the production of dust-proof macadam, characterised by the fact that gravel heated in a receptacle is in its hot condition introduced into a mixing drum where such gravel is individually and uniformly coated with tar and then, whilst still hot, placed in a heap and covered with a heat retaining covering so as to transform the tar into a good binding asphalt-like substance.

25 2. A machine for the production of dust-proof macadam, characterised by the fact that a heating drum, a drying drum for the reception of the gravel and a mixing drum for covering the gravel with tar, are mounted together on a single rotary shaft.

Dated this 5th. day of October 1909.

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